REMARKS

Favorable reconsideration of this application is respectfully requested.

The specification is amended by the present response to address the objections noted in paragraph 2 of the Office Action.

Claims 7-10 are pending in this application. Claims 7-10 were rejected under 35 U.S.C. § 112, second paragraph. Claims 7-10 were rejected under 35 U.S.C. § 101. Claims 7-10 were noted as reciting allowable subject matter.

Initially, applicants gratefully acknowledge the indication of the allowable subject matter in claims 7-10.

Addressing now the rejection of claims 7-10 under 35 U.S.C. § 112, second paragraph, that rejection is traversed by the present response.

Claims 7 and 10 are amended by the present response to clarify the language noted as unclear. The amendments are believed to address the rejections under 35 U.S.C. § 112, second paragraph.

Addressing now the rejection of claims 7-10 under 35 U.S.C. § 101, that rejection is traversed by the present response.

Applicants note claims 7-10 are directed to a "characteristic evaluation method for insulating gate type transistors". Such a method is believed to be clearly directed to statutory subject matter as such a method is believed to clearly provide a practical application and to produce a useful, concrete, and tangible result as a process for monitoring semiconductor manufacturing.

One basis for the outstanding rejection recognizes that the independent claim 7 recites "determining a difference between said mask channel width and an effective channel width based on said true threshold voltage". However, the Office Action indicates:

> This produced "difference" result remains in the abstract and, thus, fails to achieve the required status of having real world value, because the claimed limitations are determined to convert one set of numbers into another set of numbers, whereby the method does not manipulate appropriate subject matter, and thus cannot constitute a statutory process (MPEP Section 2106.02).[1]

In reply to the above basis for the rejection, applicants submit the claims clearly are not directed to merely converting one set of numbers into another set of numbers, and that the claimed invention has "real world value".

Specifically, independent claim 7 initially recites "preparing at least two insulated gate type transistors", a further operation of "extracting a threshold voltage", and further "extracting a virtual point . . .". The final operation in claim 7 is "determining a difference between said mask channel width and an effective channel width based on said true threshold voltage". Such operations clearly require physical operation of preparing at least two insulated gate type transistors, extracting threshold voltages, and then determining a difference between a mask channel width and an effective channel width. Such operations thereby clearly do not merely convert one set of numbers into another set of numbers, particularly as the claimed method must initially prepare at least two insulated gate type transistors.

Further, the determined difference clearly has "real world value".

In that respect, applicants draw attention to Figure 3 in the present specification setting forth a prior art characteristic evaluation method. Such a method may be referred to as a DW Extraction Method or a Drain Current Method. In such a conventional method an offset amount (DW = Wd-Weff) between a design channel width (Wd) and an effective channel width (Weff) is determined under the assumption that a conductance (Gm = Ids/Vds) is proportional to the Weff. Such a method may be referred to as the drain current method.

---

[1] Office Action of February 9, 2007, bottom of page 4.

Figure 3 in the present specification shows Gm characteristics of two transistors. In an extraction procedure Gm-Vgs characteristics of two transistors that differ from each other only in the Wd are measured. The Vth of the two transistors are defined and shifted by the difference between them δ to true the Vth up. A value of the X intercept is obtained from a Gm in a same gate overdrive (Vgt = Vgs-Vth). Then, DW (Vgt) = dW^{**} Vgt is defined.

However, the applicants of the present invention recognized that such a conventional method has drawbacks in that an error can be observed due to an uncertainty of the Vth, as it is difficult to determine the Vth accurately. Further, such a conventional method may not be suitable for a process monitor because the DW that depends on a Vgt is extracted.

Thereby, the present invention as set forth in claims 7-10 has been developed by the applicants of the present invention in which a certain value of the DW can be extracted because the amount of $2dW^{**}$-DW^{*} defined from an intersection has a stationary point at Vgt~0.

With the claimed method Gm-Vgs characteristics of two transistors that differ from each other only in the Wd are measured. As evident for example from Fig. 16 in the present specification, the Vth of the two transistors are defined and the shift amount δ is changed around the difference between them to plot a dependence of $2dW^{**}$-DW^{*} on the Vgt. As evident for example from Fig. 22 in the present specification, from an expression such as $2dW^{**}$-DW^{*} = DW (Vgt~0, + O (Vgt^2), the shift amount is determined so that $2dW^{**}$-DW^{*} can be a certain value when the Vgt has a value in the vicinity of 0. Thereby DW (Vgt~0) = < $2dW^{**}$-DW^{*} is defined.

The claimed invention provides improvements in that an error due to the uncertainty of the Vth is removed. The claimed invention thereby is suitable for and has practical use such as in a process monitor in semiconductor manufacturing because the certain value of the DW (Vgt~0) is extracted.

In view of the foregoing comments applicants respectfully submit clearly claims 7-10 are directed to a statutory method. Applicants also note clearly under 35 U.S.C. § 101 a process is a class of statutory subject matter, and claims 7-10 are clearly directed to a process to characteristically evaluate insulated gate type transistors.

In view of the foregoing comments applicants respectfully submit claims 7-10 are clearly proper under 35 U.S.C. § 101.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413-2220
(OSMMN 06/04)

Gregory J. Maier
Attorney of Record
Registration No. 25,599

Surinder Sachar
Registration No. 34,423

GJM:SNS\dt

I:\ATTY\SNS\24's\244907\244907US-AM.DOC